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ABSTRACT

A case study of the University of Benin in Nigeria illustrates campus planning in the development of a university. Eight aspects of university planning are considered: (1) the functions of a university (students, staff, facility capacity); (2) residential accommodation for students and staff; (3) commercial facilities (shopping); (4) environment (landscaping, parks and open spaces); (5) transportation; (6) social considerations for the five major social groups--students, senior staff, intermediate staff, junior staff, and domestic help; (7) residential neighbors' relationships; and (8) inter-institutional cooperation. (PHR)

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CAMPUS PLANNING IN NIGERIA

CASE STUDY: UNIVERSITY OF BENIN

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INTRODUCTION

This document is a concentrated attempt to provide some general comments on Campus Planning in Nigeria. This topic is of considerable importance to Physical Planners and Educators who are both involved in the rapid development of higher educational facilities in the developing countries, particularly English speaking West Africa.

The major case study of this text is the University of Benin, although references to other institutions are made. The choice of the case study was largely a result of conveniences as the author was involved in the development of that campus at various times. The University of Benin did however serve as a worthy case study because like many of the other higher institutions in Nigeria it was urban based. Also the University of Benin was, just as the three older universities originally concieved as a "lower" level institution, but accommodated at a temporary campus - which was formerly a higher institution-was eventually "upgraded" to a university.

The University evolved from the Midwest Medical Center established in 1971 to the University of Benin Teaching Hospital in 1972. By that time the institution was conceived as an Insti-

tute of Technology and was situated on a site adjacent to the University of Benin Teaching Hospital. A consulting firm produced the Master Plan for the Institute in 1972 on the basis of a competition. By the following year the Institute of Technology was up-graded to the University of Benin.

The bulk of the investigations were conducted in early 1974, although some other research was carried out before and after that time. An ambitious research schedule was organised, but the results were not impressive, since at the time of survey the institution was in an extremely dynamic state having only recently been established. Where possible, the author defered to other institutions of high learning in order to establish an information environment upon which decisions could be established. Where these methods were not fruitful, informal discussions with educators were held in an attempt to evolve any significants insights which would be of input value.

At the time of this study the University of Benin was Nigeria's sixth and newest University. By September 1975 the number of Universities expanded to 13. In 1979 some of the students and staff of the University of Benin had moved to the University of Benin permanent Campus. The bulk of the University community however were still temporary facilities.

THE FUNCTIONS OF THE UNIVERSITY

The main function of a university, or any Educational Institution is the training and Education of students. The University has projected that within the Third Development Plan Period (1976 - 1980) the student population for which the University functions will increase from its present rate of 650 students to 3,200 students.

Population

Student

At the Addis Ababa Conference on Education in Africa in 1961, it was stated that the minimum student enrolment that African Universities should attempt to service is 5,000 F.T.E. Given the rapidly increasing demand for higher education in Nigeria, it is conceivable that if over crowding does occur the actual full time enrolment of the University of Benin could easily approach 5,000 students during the initial phase of development. The Addis Ababa Conference also suggested that the maximum student population for an African university should be limited to 15,000 F.T.E. Many Western Educators feel that this figure is a realistic one in their countries also. For the purposes of master planning this figure has been assumed as the maximum condition.

Teaching Staff

The estimated teaching staff population for 1979/80 academic year is 521. This will give the University a student staff ratio

of 1:6. If a student population is 5,000 F.T.E. is assumed the ratio will bring the teaching staff force to almost 835. If again we assume the maximum student population of 15,000 F.T.E. the teaching staff will reach 2,500.

Administrative Staff

Investigations were unable to find authoritative figures on administrative - student ratios, but it is apparently the University's feeling that the present ratio is a reasonable one which will not require change with an increase in student population to 3,000; 5,000 or even 15,000.

Maintenance Staff

The move to the permanent site will require a staff increase, even for the present enrolment figures, due to the area of the grounds, the complexity of the future facilities, and the volume of equipment that will be required therefore the present ratio will increase to allow for the three afore mentioned considerations.

(Later study indicated that the ratio of Academic Staff to all categories of junior staff can be estimated to be 1:5 minimum).

Capacities

Classrooms

Classroom capacities in Nigeria differ from those in various western countries. Nigerian class sizes seem to fluctuate in the neighbourhood of fourty plus students. Optimally class sizes of thirty appear to be more acceptable. In order to determine the

maximum area of lecture rooms required we must make a number of assumptions, and we will base the enrolment figures on 5,000 F.T.E.

The initial computations will be based upon humanities students who pursue all of their studies in lecture type situations. Provisions for calculations do not take into account the large lecture theatres which are basically used for foundation type courses.

Assumption 1 - Humanities are 50 minutes each (10 min. breaks).

" 2 - Lectures periods are from 8.00 a.m. to 6.30 p.m.

" 3 - The room utilization rate is calculated at 50% on 5 hours per day.

" 4 - There are a minimum of 30 students stations per room

" 5 - Each student station comprises 20 square feet of classroom space gross area.

" 6 - Humanities or arts courses will meet three hours per week each.

The total No. of classroom hours per course week (3 days) would therefore be

1,000 students x 5 hours x 3 meeting times

or 15,000 classroom hours per week

If there are 5 hours of lectures per room per day

$$\frac{15{,}000 \text{ classroom hours per week}}{5 \text{ Lecture hours per day}} =$$

3,000 student stations per week

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given 5 days in the academic week

$$\frac{3{,}000 \text{ student stations per week}}{5 \text{ days per week}} =$$

yields 600 student stations required to educate 1,000 non science students. If there are 30 student stations per classroom (a modest figure for Nigerian Universities), then a total of 20 classrooms each of 600 sq. ft. (see assumption 5) will be required, or a total net classroom space of 12,000 square feet.

Laboratories

Laboratories have generous space requirements and are generally under utilized, but this is the price that must be paid for providing students with practical laboratory experience in specialized technological fields. The physical space requirements for laboratories is 1,000 sq. ft. per 30 students minimum.

Assumption 1 - Each science/engineer/Med. student has one lab. per day, four days week

$$4{,}000 \text{ students} \times \frac{4 \text{ labs}}{5 \text{ days}} = 3{,}200 \text{ student station laboratories units days}$$

$$\frac{3{,}200 \text{ sslu/day}}{30 \text{ student stations/Lab.}} = 107 \text{ labs required}$$

107 labs x 1,000 sq. ft/labs (30 student capacity) = 107,000 sq. ft. of laboratories required.

Capacity Summary

Faculty	F.T.E.	Lecture Rooms	Laboratories	Net Instructional Area (Sq. Ft.)
Humanities	1,000	20	-	12,000
SCI/ENG/MED.	4,000	60	107	107,000+36,000
TOTAL	5,000	*80	107	155,000 sq. ft.

*(This figure can be reduced to 60 by adjusting the scheduling of classes).

The Net Instructional Area caculated only applied to teaching spaces. To obtain a gross area, the value of the Net Instructional area has been assigned as 50% of the gross area. The gross figure would therefore be a minimum of 310,000 square feet of facilities to educate 5,000 students and 930,000 sq. ft. for a student population of 15,000.

RESIDENTIAL ACCOMMODATION

Optimally Universities would like to house the total number of its staff of all cadres. However, physical restrictions of the site normally limit the provision of accommodation to only a small percentage of staff.

The University of Ibadan, Nigeria's oldest University and therefore the country's standard bearer, accommodate approximately 23,000 students, senior staff and junior staff on a site of 2,800 acres.. This gives an overall site density of eight persons per acre. The initial site for the University of Benin 1,044 acres and covers land from the Lagos Road to the Ikpoba River. Assuming the same density as U.I., the total UNI-BEN population could reach over eight thousand persons.

The survey for the expanded site, which crosses the Ikpoba river and spreads to Auchi Road, was being conducted at the time of this study so the exact acrage was not known. But from inspection the additional area is almost twice the size of the initial site, thus being the total university land to say 3,000 acres. Roughly the size of the University of Ibadan is land holding.

Students

In the University's temporary site hostel rooms average 216 sq. ft. for a triple room. The actual space appears to be adequate, but because of the room layouts, which were originally for two students, the rooms give a visual impression of over crowding.

If we assume that these rooms are satisfactory for two students the average square footage for a hostel room per student can be assigned at say 100 sq. ft. for an optimum condition.

The University is being programmed to have a minimum student enrolment of 3,200 students by the 1979/80 academic year. This will realize 320,000 sq. ft. of bedroom, and if we use the figures of 5,000 F.T.E. the bedroom requirement will be 5000,000 sq. ft.

Again it should be noted that this is an optimum figure based upon the standards of the former teacher training college on whose site the temporary University Campus is located. These figures do not represent service areas, toilets, congregation spaces, stores (storage rooms) offices or circulation.

Senior Staff

By the 1979/80 academic year the University has proposed that the senior staff be expanded to 521. If we use our assumptive figure of 5,000 F.T.E. based on the student staff ratio the staff would approach 835 persons.

The University is responsible for determining what percentage of the academic staff will be housed on site. Again, however, using University of Ibadan as the standard the total resident senior staff population (including families) is approximately equal to the resident student population.

Therefore using 10 person per family (due to the nature of the African extended family) the range of units required will

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be between 320 and 500 or 60% of the academic staff. If the overall area of 4 bedroom bungalow is 3,000 sq. ft. the accommodation for academic staff will have a physical space implication range of 960,000 to 1,500,000 sq. ft. If we assume one half acre per building plot, then the staff to teach 3,200 students will require 260 acres of land, and the 835 senior staff needed to support 5,000 students will require a residential estate of 418 ares. The University, therefore, if developed to the maximum capacity of 15,000 students will require residential areas in excess of 1,254 acres.

Although there is no authoritative information at present on housing criteria for single staff, however, a universal assumption is that they can be accommodated in small flatlets. At the Kumasi University of Science and Technology in Ghana, these flatlets for single staff have been interpreted into semi-detached bungalows with each unit consuming only 500 sq. ft.

Junior Staff

The University of Ibadan accommodates approximately 35% of its junior staff on the campus. These residents with their families generate a population of almost 14,000 persons, and require 1,400 dwelling units. Standards for junior staff housing are generally very low and they fluctuate with the standards of low cost/low income accommodation found in the locales. It was hoped that provisions for junior staff housing could possibly be coordinated with the Federal Government Housing Scheme.

The lower cadre of University employees are basically a stable group once they have found safe and suitable homes for their families. Only after that point are they in the position to seek socio-economic mobility and advancement. Federal Housing Scheme Funds generated for junior staff housing schemes would be a welcome relief to the often neglected "third estate" and would also help to ease the University's financial burden.

COMMERCIAL FACILITIES

In the initial master plan a commercial shopping complex was provided on the Campus off the main road. This shopping centre would basically service the senior staff.

Commercial facilities for the lower economic groups (junior staff, students and domestic staff) should also be located within the University. There already exists a village market on the site. This market presently is accessable by road and it could possibly be expanded to service an enlarged campus population. It could also be used as a vehicle to start a mode for the development.

Convenience Shopping

As the university expands, traders and hawkers will eventually be attracted to the site in search of customers. Small convenience shops should be established at various location throughout the campus, and the university should issue a limited number of trading permits for shop occupants and hawkers.

ENVIRONMENT

Western civilization has evolved through man's conquest of nature. The discovery of fire helped man overcome an elemental factor of the environment - the cold, and the air conditioner conquered another environmental factor - heat.

However, recent times have seen a growing concern for the care and quality of the environment. The problem of environmental pollution has grown to such proportions that it has been even commanded the attention of the United Nations. And it is not coincidental that the United Nations environmental unit has been located in Africa. In the tropical zones environment is often taken for granted. But in spite of misconceptions about tropical conditions attempts to achieve comfort both internal and external are of extreme importance and normally depend upon both artificial and natural techniques.

Landscaping

Landscaping is fundamental in the fight to maintain a high quality of the environment. Buildings alone do not make a campus. Often time it is that long walk through shaded aesthetically soothing promennades that gives the student these last few moments needed to psychologically prepare the himself for the examination, or the lecturer time to rethink his lecture.

Trees and foliage help to absorb rain during the rainy season, and they help reduce the temperature during the hot season, as well as producing life giving oxygen during the protosynthesis process.

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As an optimum condition, landscaping can be used as a method of land demarcation creating site boundries so that the buildings can follow - planning for nature: than planning for man.

Reserves

A portion of the site should be set aside as a nature reserve, particularly the area in the vicinity of the Ikpoba River. The reserve may also be comprised of other areas that are rendered unbuildable due to the soil composition or other natural factors.

Some formable land also should be included in the reserve. These farm lands can, in the future be used by the Agricultural Engineering Department of the University as its Laboratory or Experimental Farm.

Parks and Open Spaces

Although the Sports Centre, the Senior Staff Club and the Students' Union building will no doubt provide recreational facilities for students and instructors, provisions should be made for informal recreational fields for all levels of staff and also for children's playgrounds, which should be included all within proximity of the residential accommodation.

The site is traversed by a section of the Ancient Benin wall (and Moat) which was a defence fortification of the Ancient Benin Empire. Efforts were made to chart the exact path of the city wall through the campus.

The location of this artifact is significant in that it is a national monument. Unfortunately however little attention has been paid to this source of cultural pride, and it has hence deteriorated.

The initial development plan of the institutions paid little defference to this historical monument. Further development of recreational spaces however should be planned with respect to this national monument.

TRANSPORTATION

A campus transportation and circulation network is necessary for the smooth and efficient flow of people, goods and services.

Vehicles which carry all three of the above, should be limited to a bare minimum and they should not disrupt the movement of pedestrains. The separation of vehicular traffic from pedestrian traffic ensures the pedestrans safety from careless drivers, and also helps to maintain the human scale of the campus.

At those points where pedestrain paths and vehicular routes interect, overhead bridges for pedestrains and cyclists should be provided to facilitate a continuous flow of traffic.

The road which forms the boundary between the main campus and the hospital should be depressed. By this method the main physical restraint dividing the two units will be eliminated, and the plan can be an integrated one.

Pedestrain arteries are of two classifications: natural and artificial. The natural pedestrain ways take the form of landsaped vistas and "forest tunnels" - narrow foot-paths carved out of the natural bush, putting the pedestrain in a natural environment, the natural arteries provide shelter from the sun and at a minimal cost.

The artificial pedestrain arteries consist of the interconnecting network of covered work ways. These corridors provide protection during the rains as well as providing shade from the mid-day sun.

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SOCIAL CONSIDERATIONS

Nigerian Universities display five major social grouping: students, senior staff, intermediate staff, junior staff and domestic help. Although all the social groups interact at one point in time, normally during working hours, each group maintains their own peculiarities, partially influenced by the segregated residential and employment patterns.

Social interaction between the university community should transpire within social (or sociable) spaces. When these sociable spaces are not provided, man, being a social animal, will create them himself. Hence, in many universities social spaces have been created out of non-sociable spaces.

This misuse of space has a high nuissance value to the university community. Corridors, for example, which are designed to ensure the smooth and efficient flow of communications are non-sociable areas. When these corridors are used for sociable purposes, communications and flow which are valuable to the educational process, are disrupted or at least disturbed.

Social spaces must also exhibit variety, as not all social spaces service the same social functions. Social activities varry in the level of noise produced, the population to be accommodated, the duration or the social contact, the social mood of the meeting, and the people who are congregating.

Architecture is the vehicle through which suitable spaces attain their detailed definition. Planning on the other hand is

the mechanism for the creation of a social climate. As the university moves to the permanent site a heterogeneous mixture of social groups, the University community, will be accommodated and serious consideration must be given to the creation and maintenance or a harmonious social atmosphere.

RESIDENTIAL NEIGHBOURS

A University does not exist in a vacuum and at some point in time must establish a relation with its neighbours. The relationship between town and gown has been a strained one throughout the history of universities of the Western world.

Some Universities unable to cope with this conflict, such as the University of Chicago in America, built fortresses like walls around their campuses in an attempt to isolate the University's neighbours. Other institutions in an attempt to associate themselves with their neighbours use their influence to effectuate progressive change for its environs, thus having a positive impact on it's neighbours. By this method residential neighbours look upon the institution as an asset to their community, and will protect it as their own.

Although in Nigeria there are some positive cultural connotations associated with "building the compound wall," it is still important to recognize that the University as a public institution should as much as possible be physically open to the local residents.

INSTITUTIONAL NEIGHBOURS

Higher Educational Institutions in Nigeria normally engages in co-operative ventures with a number of its Institutional Neighbours. UNIBEN is involved with the Nigerian Institute for Oil Palm Research, the Nigerian Rubber Research Institutes as well as Government research stations, and other Nigerian Universities.

The University is hoping in the future to bring under its umbrella all post secondary educational institutions in the Mid-western (Now BENDEL) State.

This involvement with its institutional neighbours will not only add to the prestige and influence of the University but it will also have an impact on the life of the University community and future planning.

CONCLUSION

A University, or any institution of higher education in Nigeria experiences a number of unique developmental problems. Essentially the concept of higher education has evolved around the idea of a singular living - working environment.

As a result of this unitary environment, the campus planner in Nigeria is confronted with a dual task. Initially the planner must plan an educational facility. The additional task however is the planning of a residential community around rigid parametres of socio-economic class statification, and with all of the attendant ramification of urban communities.

(About the Author

The author is an Architect and Planner who has been involved in the development of higher education in Nigeria as a professional, an academician, and most recently as policy formulator.)

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